

Sadharanikaran, A Theory for Social & Health Behavior Change

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Abstract

Aristotle is considered the “father of communication” with his classical text, “Rhetoric” being written around 4 BCE. Merely 200 hundred years later, in an eastern part of the world, another great communication tradition was born in India, with Bharat Muni’s “Natyashashtra”. The paper describes Sadharanikaran, an Indian theory of communication that is based on a classical Indian text on dance, drama and aesthetic theory, the “Natyashashtra”. It discusses its relevance to global health, specifically in the context of social and health behavior change.

“Sadharanikaran”, meaning “simplification without dilution”, represents a communication tradition that includes simplification, rasa (emotion), sahridaya (compassion with affection), asymmetry (hierarchy) and social universalization. Sadharanikaran explicates the relational and social processes of communication as opposed to individual constructs. It articulates emotion and collective social change as central responses to communication, outlining “compassion with affection” as an essential element for “real” communication and recognizing that in some socio-cultural settings, asymmetrical communication occurs. An empirical application of Sadharanikaran to promoting handwashing with soap after defecation in rural Maharashtra, India is discussed. The challenge is how to bring about social health behavior change with communication interventions that are both socio-culturally meaningful and persuasively powerful. The relevance of Sadharanikaran to local and global contexts is outlined.

Key words

health communication, Asian communication theory, non-western theories, theory testing, Sadharanikaran

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Aristotle is considered the “father of communication” with his classical text, “Rhetoric” being written around 4 BCE. Merely 200 hundred years later, in an eastern part of the world, another great communication tradition was born in India, with Bharat Muni’s “Natyashashtra”. And like the “Rhetoric”, Sadharanikaran, the communication theory based on the Natyashashtra has relevance to global contexts and settings. It’s relevance to the field of social epidemiology lies in the provision social perspective of viewing communication processes as they influence health deficits or surpluses. Its constructs are “relational” as opposed to “individual” and therefore its apt for communities that are socially dense and interconnected.

Sadharanikaran, “simplification without dilution”, illuminates the principles of communication that has led to the transmission of India’s ancient philosophies to its people in the modern world (Kapadia-Kundu, 1994). These principles have implications for global health as they provide a complementary social model to the predominant individually driven information processing theories such as Theory of Planned Behavior and the Stages of Change Model. Elements of Sadharanikaran exist

in modern theories of communication such as ideation, bounded normative influence, perceived social norms, emotion etc. (ref, ref, ref). However, its five constructs collectively offer a model for social behavior change addressing social pressures that bind individuals to norms and behaviors.

Sadharanikaran, is based on a classical Indian text on dance, drama and aesthetic theory, the “Natyashashtra”, written by the sage Bharat Muni between second century B.C. and first century AD (Yadava, 1987, Adhikary, 2010). The Natyashashtra, a treatise on dance and drama analyzed the effect of “live performance” on an audience, understood the hierarchies and asymmetries of communication and placed “sahridaya” (compassion filled with affection) at the centre of all communication processes. By the time the Natyashashtra was written, Indian society had developed intrinsic verbal and nonverbal cues of communication that were hierarchically encrusted within concentric circles of household, clan and community (Rahim, 1987, Lannoy, 1971).

Sadharanikaran’s relevance to the 21st century is outlined in the context of moving the theoretical debate towards “de-westernization”, multi-culturism and pluralism within a broader ecological framework (Wang, 2011). Sadharanikaran includes a set of constructs that are not considered in predominantly cognitive theories. The paper describes the Sadharanikaran theory, provides an empirical application of the theory to a public health program and outlines its applications at global and community levels.

The fundamental question of the application of communication theories derived in Euro-American contexts to non-Western settings has been sporadically addressed in mainstream health communication literature. There are few empirical examples of application of non-western theories to global health practice. Researchers have explored the area of alternate non-Western theories (Airhihenbuwa, 1990, Dissanyake, 2009, Kincaid, 1987, Melkote, 1991, Miike, 2002, Min Sun Kim, 2002, Wang, 2011, Wang & Dissanyake, 1984, Yadava, 1987).

In many cultures, a complex set of formal and informal social institutions uphold the primacy of the social group above that of the individual (Kincaid, 1987; Lannoy, 1971). In these settings, bounded social norms, prescribed social relations and structured rules of communication create a milieu in which most social actions and health behaviors occur (Rogers and Kincaid, 1981, Kincaid, 2004, Kapadia-Kundu, Khale, Upadhye & Chavan, 2007). Newer frameworks and models are required to assess the micro-environmental aspects of behavioral patterns, especially in communities where social hierarchies, relations and networks influence health behavior. In such contexts, to focus primarily on individual agency and intent as the main route of persuasive communication, is to perpetuate theory failure (Kapadia-Kundu, 1994).

More often the scenario is one where cognitive theories are applied to non-western settings (Miike, 2002). When communication programs fail to have an impact in resource poor settings, the issue of theory failure is rarely explored (Hornik 1988, Kapadia-Kundu 1994). The gap between policy planners and communication theorists in resource poor settings is copiously wide enabling several generations of public

health communication practitioners to work under the dominant paradigm of cognitive theories. Unfortunately a facile form of cognitive theories is used in resource poor settings with the false assumption that information provision will lead to social and health behavior change. The “knowledge-behavior” gap has been discussed in scientific communication literature since several years but has had little impact on global health programs on the ground (Hornik 1988, Rimal 2000, James, Reddy, Taylor, Jinabhai, 2004).

Sadharanikaran can be applied to social contexts, wherever human communication occurs. It provides a framework to examine emotional response without the biases of twentieth century western science (Kapadia-Kundu, 1994). It recognizes the centrality of emotion in evoking a response from the audience. Sadharanikaran also accords primacy to the “universalization” of a collective response to a communication stimulus.

Sadharanikaran is presented here as a communication theory with applications to several areas of communication enquiry. These include understanding the relational processes of communication as opposed to individual constructs, placing emotion and collectivity as a central response to communication, outlining compassion (with affection) as an essential element for “real” communication and recognizing that in some socio-cultural settings, asymmetrical communication occurs. Sadharanikaran combines a compassionate, emotional and collective approach to communication processes with the powerful concept of “simplification with commonness”.

Origins of Sadharanikaran

Considered the fifth Veda (the four Vedas are the oldest Hindu scriptures), the Natyashashtra was written in the language of the people, Pali. The four Vedas were written in Sanskrit and were out of reach of almost all the common people. Bharat Muni addresses the following question in the first chapter of the Natyashashtra:

“What are the circumstances, which led to the creation of the fifth veda; and for whom was it created?”

“...They (the gods) ...felt the necessity of bringing humanity to the right path. This could not be achieved through Vedic instruction, because the Sudras were excluded from the circle of Vedic study. The gods, therefore wanted an instrument of instruction such as could be utilized for instructing all, irrespective of caste, and as such would be different in form from that of the categorical imperative, would not be a mere command, which is unpleasant to hear and even equally unpleasant to carry out; but such as would delightfully instruct, would cover the undesirable tone of command under pleasant sights and sounds, would administer the bitter pill of instruction under the sweet coating of sugar, would mix the bitter medicine of instruction with sweet milk so as to make it palatable.”

— *Abhinavabharati, vol. I, 11, tenth century AD., as quoted in*

K. C. Pandey’s Comparative Aesthetics, vol. 1, 1959, p. 15-16.

The development of the *Natyashashtra* spans a period of 700 years after Bharat Muni's initial rendition. The treatise evolved with appraisals from several critics through the years. Unfortunately, most of the commentaries on the *Natyashashtra* written before the 10th century AD are lost. We learn about them in the young Kashmiri philosopher, Abhinavagupta's expert commentary on the *Natyashashtra*, which to date remains the most comprehensive analysis on the treatise. It is largely Abhinavagupta's contribution which led to the development of a full fledged theory of aesthetics based on the *Natyashashtra* (Gnoli, 1956, Kale, 1974, Pandey, 1959).

There are at least two recensions of the *Natyashashtra*, a longer version with 6,000 verses and a shorter version of 300 verses. Which version came first remains a matter of dispute (Pandey, 1959). The *Natyashashtra* has 36 chapters, the sixth of which is considered the quintessence of the treatise. The sixth chapter is known as the "Rasadyaya" and explicates the Rasa (emotion) theory. It is discussed in detail in a later section.

Despite being obviously devoid of twenty first century communication jargon, there is no doubt that the *Natyashashtra*'s abode lies in communication theory. "The discussion in the *Natyashashtra* centers on the problem of effective communication. It analyzes and explains the elements of effective communication..." (Kale, 1974 p. 77). A specific communication theory based on the *Natyashashtra* was first proposed by Tewari (1980) and later expatiated by Yadava (1987). It was named "Sadharanikaran" which means "simplification, establishing commonness and universalization." The concept of simplification has been used to explain the extraordinary connection between the ancient Hindu texts, "the Great Traditions", and the myriad "Little

Traditions” which bring the essence of the classics to the common people in the form of folklore, tales and myths (Lannoy, 1971).

Sadharanikaran is based on the “rasa” (emotion) theory of Indian poetics formulated by Bharat Muni. In the tenth century AD, two young critics, Bhattanayaka and Abhinavgupta further refined the theory. *Sadharanikaran* represents a sophisticated analysis of emotions and emotional response. It accords emotion an equal place with cognition, in understanding the human communication process. *Sadharanikaran* centers around the idea of establishing “commonness”. This is similar to the Latin word “communis” from which the term communication is derived (Tewari, 1980).

The links to communication theory are apparent. For example, the *Natyashashtra* is presented from three points of view - the dramatist, the actor and the spectator. In today’s communication terms we would use source, channel and receiver. The communication process as outlined in the *Natyashashtra* can be applied to persuasive communication campaigns. This is feasible because the *Natyashashtra* deals with the technicalities of audience response, which parallels the goals of persuasive communications. Also, the context of human communication remains essentially the same as it was 2,000 years ago except for the introduction of mediated contexts that include radio, television, mobile phones and the Internet.

[ADD Figure 1]

The essence of *Sadharanikaran* embodies the relational, emotional, collective and aesthetic aspects of the communication process. *Sadharanikaran* is an audience oriented theory (Rahim, 1987).

Yadava (1987) presented *Sadharanikaran* as a valid framework to study communication processes in the modern world and outlines its five tenets. **The five tenets of *Sadharanikaran* are**

1. **Sahradaya (shared compassion):** “Emotion is about relationship not individual, about process not states” (Timm, 1991, p.63). *Sahradaya* denotes the common compassion between source and receiver. It represents the relational aspect of communication and emphasizes the need for common compassion before any “real” communication can occur.
2. **Rasa Utpathi (emotional arousal) & Rasa Swadan (aesthetic pleasure):** Emotional response emphasizes the reaction invoked in the audience. To achieve *rasa utpathi* seven permanent moods have to be aroused. The source should evoke reactions in the audience that lead to a feeling of well being, happiness and harmony.
3. **Simplification:** *Sadharanikaran* means “simplification without dilution”. The principle of simplification implies that communication requires presenting content in an “entertaining” manner to reach a large audience. The process of simplification has been operationalized through the ages in India with the use of folklore, metaphors and illustrations. Says Yadava (1987) “this approach

makes communication a dynamic, flexible, practical and effective instrument of social relationships and control”(p.169).

4. **Asymmetry:** Asymmetry implies that communication flows are unequal, essentially one-way, from the source to the receiver. Indian society was already stratified into the caste and gender inequity by the time *Natyashashtra* was written. Communication flows within society reflect this inequity.
5. **Universalization:** The tenet of universalization refers to the ultimate collective communication experience that results in commonness. It is this common collective response that results in complete communication of the audience with the communication stimulus.

Sadharanikaran should be understood in the context of *Rasa* (aesthetic emotion) as it is the essence of the theory. The essential elements of *Rasa* are:

- ⌘ ***Bhava and rasa:*** Human emotions are categorized into nine permanent emotions (*bhava*), nine aesthetic emotions (*rasa*) and 33 transitory or accessory states. Sage Bharata says: “Emotion is manifested by the interplay between causes, effects and accessory moods” (de Bary, 1958).
- ⌘ ***Sadharanikaran:*** The simplification through which aesthetic emotions are evoked is called *Sadharanikaran*;
- ⌘ ***Sahradaya:*** Refers to the rapport between audience and source. For *Sadharanikaran* to occur, there must be *sahradaya* (*shared compassion*)

between the source and the receiver. Rapport is achieved through emotional response and appreciation.

Bhava and Rasa (Personal and Aesthetic Emotion)

The key concepts of the *rasa* theory are *bhava* and *rasa*, both of which approximately translate to the English word “emotion”. But they do not mean the same thing. In fact, in their difference lies the essence of the theory. *Bhava* can be translated as “an intense personal emotion” and refers to a category of permanent emotions. *Rasa*, on the other hand literally means “juice or essence” and refers to an impersonal aesthetic emotion (Timm, 1991, p. 65-67). There are nine permanent *bhavas* which can give rise to corresponding *rasas*. Of these nine permanent *bhavas*, five are related to positive emotions and four are aligned with negative emotions (Table 1). The positive permanent emotions are love, humor, heroism, wonder and peace. The negative emotions are pathos, violence, anger and fear.

Insert Table 1 here

Kale (1974) recommends that the term “*rasa*” be retained as it does not translate directly into English. The various descriptions/definitions of *rasa* are outlined to provide the range of interpretations of the single term “*rasa*”.

...Rasa, the aesthetic configuration, which consists of a situation, mimetic changes, transient emotion and basic emotion so harmoniously mixed up that the configuration presents something to the aesthete something very different from the juxtaposition of the said contents

— (Pandey, 1959, p. 6)

...It is not pure unity but unity in multiplicity. The unifying factor in the multiplicity is a basic state of mind (sthayi bhava) which binds together in an organic whole

— (Pandey, 1959)

The Sages asked: What is the meaning of rasa?

Rasa is so called because it is relished.

How is rasa relished?

Just as healthy men, eating food dressed with manifold accessories enjoy the different tastes (the sweet, the sour etc.), even so, spectators with attuned minds relish permanent emotional states (love, heroism etc.), which are presented and nourished with manifold feelings and their actions through limbs, speech and involuntary physical manifestations.

— From *The Natyashashtra*

Critics say that the above analogy to food comes from an early association of the word “rasa”, as a physiological term connoting the quality of taste (Chaudhary, 1964).

The word rasa implies fluid, essence, flavor, relish. It is concerned with emotional

response, emotion at an aesthetic level as opposed to an individual level. Thus at a cathartic level, it involves experiencing emotions at a de-individualized plane. However ethereal the definition of *rasa* may sound, its technical components are specific and well defined.

Technical Components of *Rasa*

Rasa has four technical components: *vibhava*, *anubhava*, *vyabhicharya* and *sthayibhava*. Though expounded at length in the *Natyashashtra*, the technical components are presented briefly in this section. Since *rasa* refers to aesthetic emotion, it requires a different approach from that associated with permanent emotions. For example an actor depicting love for the heroine is portraying the physical manifestation of the emotion in terms of facial expressions etc. but there is no true “cause” for the emotion because the actor is only acting. The same is true of the emotions aroused in the audience.

Vibhava: “...the word “*vibhava*” stands for the dramatic situation, which is not the cause but only a medium, through which emotion arises in the actor. But emotion in the spectator is due to identification with the hero. *Vibhava* is so called, because it is arouses emotion in a manner quite different from that, in which emotion arises in actual life.” (Pandey, 1959, p. 24). The *Natyashashtra* believes that emotion can be evoked by an external stimulus, thus it is spatially and temporally rooted. *Vibhava* has two elements, the stimulus or object that arouses emotion and the environment or external surroundings which intensifies the effect generated.

Anubhava: Anubhava is the resultant emotion aroused in the audience in response to an aesthetic emotion i.e. feelings actually experienced by the actor and the audience. Anubhava is part of the technical components to distinguish it from emotions felt in real life.

Vyabhicharya: These refer to the 33 transient emotions

Sthayibhava: Refers to the nine permanent emotions.

Universalization

The transformation of *bhava* into *rasa* occurs through the aesthetic process which results in the universal emotion transcending the individual sense of self. “Along with this universalization, there is also a process of abstraction which detaches a painful situation from its painful setting ...this universalization and sublimation also disassociates the emotion from its particularized form, e.g. love, etc., so that it is relished simply as aesthetic emotion” (de Bary, 1958, p. 264)

“At the time of relishing *Rasa*, the *Vibhavas* (dramatic situation), the *Anubhavas* (emotion aroused due to an aesthetic stimulus) and the *Vyabharibhavas* (accessory emotions), along with *Sthayibhavas* (permanent emotions) evoked by them present themselves in their universal and impersonal aspects, as transcending the limits posed by time and space” (Mukherji, 1991, p. 141). *Sadharanikaran* represents the response that emerges from the unity or melding of its constituents: simplicity, *rasa*, asymmetry and universalization. *Rasa* includes *sahradaya* (compassion) and emotional response, universalization refers to the collective in terms of social networks, bounded social norms and communities. In modern times, the level of reference of the collective will

differ based on the type and nature of the communication effort. For example, if the communication strategy is at the household level, the collective reference will be the neighbourhood or village. However, if the communication effort includes a large national media campaign then the collective can be broadened to district, city or state levels.

The Role of the Audience

Sadharanikaran is an audience-based theory. Chapter 27 of the *Natyashashtra* outlines audience characteristics in detail (Kale, 1974). The audience characteristics include a range of cognitive and affective areas. The theory recognizes that all the mentioned characteristics cannot be found in one single individual, rather audience characteristics will vary according to the nature of the audience group (e.g. young people or mothers).

The key audience characteristic is “sahradaya” or compassion. In a non-aesthetic situation, it equates with the ability to identify with the stimulus and the situation. “It presupposes ...an experience of the emotive situations, similar to those presented on stage, in ordinary life on the part of the spectator.” (Pandey, 1959, p.162). The other requirements of the audience are: taste (*rasiktava*), imagination, intellect, spiritual contemplation, suitable environmental conditions and ability to identify.

Sadharanikaran’s value as an audience-based theory lies in its ability to explicate beyond individual response to collective response. In its original formulation, the collective response refers to an audience viewing a drama. When applied to a population-based context of a communication campaign, the response should be at the level of collectivity most appropriate for the intended audience. This level of

collectivity, within the backdrop of rural India, is the sub-clan or sub-caste, which controls the spheres of influence and decision-making. The best known audience theory in the western context is Roger's diffusion of innovations which predicates communication flow and action on certain individual characteristics of the audience (Rogers, 1962). *Sadharanikaran*, by assigning equal weight to source, channel and receiver, provides a framework for a more holistic appraisal of the situation.

Empirical test of the *Sadharanikaran* theory

The paper presents data from an innovative child-led community intervention to promote hand washing with soap after defecation among women in rural Maharashtra. Hand washing with soap resulted in a decline in incidence of pneumonia and diarrhea, both leading causes of infant mortality (Luby, Agbotwala et al, 2004). Previous efforts employing conventional communication approaches delivered by adults in these communities had failed to produce substantial change in hand washing behavior (Kapadia-Kundu, 1994). Trained child change agents (*Bal Sevaks*), 9-14 years, visited 20 households once a month to promote hand washing with soap. The intervention was implemented for 3 years in Paithan block, Aurangabad district.

Rooted in the *Sadharanikaran* framework, intervention activities introduced non-cognitive elements into the *Bal Sevaks*' interactions with women in their community. Children readily evoke positive emotions. The children used colorful posters to persuade women and these posters further enhanced their emotional appeal. We hypothesized that women would be more patient and willing to listen to children promoting hygiene behaviors about a sensitive topic – hand washing with soap after defecation. Incorporating the theoretical constructs into the intervention would be

more effective than focusing primarily on information provision. Simplification was the key guiding principle to the *Bal Sevak* strategy. The messages had to be simple enough for a child to understand but also to enable *Bal Sevaks* to engage adult women long enough to deliver messages about hand washing behaviors. All the tenets of *Sadharanikaran* - compassion, emotional arousal, social influence, simplification and unequal communication are applicable to the *Bal Sevak* intervention. The main outcome of interest in the study was hand washing with soap after defecation in rural women.

Sadharanikaran Variables

The *Sadharanikaran* theory was operationalized into six variables. These are: simplicity, *rasa* (emotional response) index, unequal communication (asymmetry), diffusion of the message within the family and within the neighborhood; and universalization.

(1) Simplification was measured with a single question:

Do you understand the information the Bal Sevaks provide ?

(2) *Rasa* Index: This scale measured the emotional response evoked by the *Bal Sevaks*. Line drawings of facial expressions were used to measure emotion. Five emotions were measured: happiness, curiosity to learn, attentiveness and feeling about *Bal Sevaks* serving their community. Intensity of the emotion was measured using the *Pachod-paisa* scale and it had a Cronbach's alpha of .86 (Kapadia-Kundu, 1994).

(3) Unequal Communication (asymmetry) The *Bal Sevak* intervention inverted the asymmetry (unequal communication) with children instructing adults instead of the other way around. Asymmetry was operationally defined as the direction of flow of

the *Bal Sevak* messages between the respondents and their children. Therefore a reverse asymmetry measure was created to see how many children initiated discussion of the *Bal Sevak* message with their mothers. This was measured by the question: *Did your child talk with you about the Bal Sevak messages?*

(4) & (5) Network Variables: Diffusion of the *Bal Sevak* message within the family and within the neighbourhood. While asymmetry looks at the direction of the flow of communication, the “network” variables were measured by asking respondents if they had discussed the message within the household and with other women outside the household. The two variables used to measure diffusion of the message are: *Did you talk about the Bal Sevak message within your family? (Yes/No) With how many other women did you discuss the Bal Sevak message?(talked with other women: 0-10)*.

(6) Universalization The universalization measure assessed the extent of social influence and group effect on individual behavior. Measured as a continuous variable, respondents were asked to state how many women in their neighborhood washed their hands with soap. The question was phrased as follows: *Out of 10 women neighbours, how many do you think wash their hands with soap after defecation?*

Other variables measured to predict hand washing with soap after defecation include location of soap, convenience of soap use, ritual belief of purity/pollution, and knowledge of diarrhea prevention. Soap location was measured as “inside the house” or “outside the house”. Convenience of soap use was measured on the Pachod paisa scale (Kapadia-Kundu & Dyalchand, 2007). The Indian belief system of “ritual impurity” was also measured using the Pachod paisa scale by asking the question, “How impure (paisa in a rupee) is the “dabba” (can) that you carry to the defecation

site?” A four item knowledge index was created which summed knowledge scores related to germ theory, the role of the fly in disease transmission, fecal-oral cycle of contamination, and importance of hand washing with soap after defecation. Knowledge was measured from 0 = low knowledge to 12 = high knowledge.

Development of the “Sadharanikaran” Index

An important objective of the paper is to empirically demonstrate the use of an ancient Indian theory of communication to predict behavior change. We hypothesized that the analytical model derived from this theory would significantly increase the amount of variance explained compared to a model using only cognitive and attitude measures as predictors of behavior. The Indian theory, *Sadharanikaran*, as measured by the simplification, emotional response, equal/lateral communication and universalization variables was hypothesized to explain additional variance in hand washing behavior.

The study reports the testing of the Sadharanikaran theory by comparing two models – one with knowledge and attitude variables and the other with the knowledge, attitude and Sadharanikaran variables. Two logistic regression models are fit – a nested and a full model (Hosmer & Lemeshow, 1989). The nested logistic regression model is fit with the data in the intervention group. The dependent variable is hand washing with soap after defecation. The nested model included socio-demographic, knowledge, attitude and ecological variables. The Sadharanikaran theory was tested with the full model. This model included Sadharanikaran variables and all the variables in the nested model.

Insert Table 2

Table 3 shows the crude and adjusted odds for the six Sadharanikaran variables. This analysis helps us understand the interrelationships between the Sadharanikaran variables and also assess which of the variables have the strongest association with handwashing with soap after defecation. The adjusted odds include two models – one with all the Sadharanikaran variables except universalization (Table 2, column 1) and another that includes all Sadharanikaran variables (Table 2, column 2). The adjusted odds were run with the first five Sadharanikaran variables and then with the social influence variable added to the model. The reason why one model was run without the universalization variable was because it had a very strong association with hand washing with soap.

Simplicity is one of the central concepts of Sadharanikaran. Seventy five percent of the respondents rated the *Bal Sevak* messages as easy to understand. The data show an association between simplicity of message and soap use at a bivariate level with a odds of hand washing with soap being 1.8 if the woman has understood the message (Table 3). Simplicity is significant at the crude odds level but then the variable does not retain significance in the two adjusted models (Table 3). However, “simplicity” of message was highly correlated with discussing it with other people ($r=.56$).

Insert Table 3

Rasa towards the *Bal Sevaks* was measured using line drawings of facial expressions that included happiness, attentiveness, curiosity and anger. Table 3 indicates that the Rasa index that represents the emotional response of the women to the *Bal Sevaks*,

retained an independent effect on hand washing with soap, in both the adjusted models with the Sadharanikaran variables (Table 3).

When universalization is entered with the other Sadharanikaran variables, it retains a significant association with hand washing with soap after defecation. This is consistent with Sadharanikaran theory because social influence is viewed as an outcome of the other processes in the theory. The rasa index is the only other variable that has a significant association with hand washing with soap after defecation ($p < .05$) in the presence of the universalization variable.

The Sadharanikaran variables for multivariate analysis were organized as two theory variables: (1) the Sadharanikaran index with simplicity, rasa, equal communication and discussion variables; (2) Universalization was kept as a separate theoretical variable due to its high correlation ($r = .34$) with the dependent variable. It was entered into the multivariate model as a continuous variable (number of women neighbours perceived to be using soap, 0-10).

The Sadharanikaran index was divided equally into a three level variable that categorized respondents on a high, medium or low level on the index.

The aim of the analyses was to fit two separate predictive multivariate models to determine the predictors of hand washing behavior. The likelihood ratio test was used to test the Sadharanikaran theory by comparing the saturated model (with the two theory variables) with the nested model (without the two theory variables) (Kapadia-Kundu, 1994) . The variables used in the final multivariate predictive models related

to hand washing behavior are presented in Figure 2. These can be divided into three categories — control, ecological/environmental/cultural, and knowledge. All three categories were used in both models. The final model with the Sadharanikaran variables includes all the variables listed in Figure 2 to control for confounders.

Insert Figure 2

The empirical testing of the Sadharanikaran theory involved fitting a saturated multivariate logistic model that included all the significant predictors of hand washing behavior and compared it with a constrained model without the two theory variables. A total of nine variables were entered into the saturated model (Table 4, Model 2). Of the control variables, literacy had a significant effect on hand washing behavior and age was not associated with hand washing behavior. Part time laborers were two and a half times more likely to use soap than women engaged in agriculture.

The variables entered next in the saturated model (model 2, Table 4) were the ecological, cultural and cognitive categories. The ecological variable refers to a behavior setting – location of soap. Location of soap is a strong predictor of soap use. Women who keep soap outdoors have a five times higher probability of using soap after defecation. This makes sense if it is viewed through the lens of the Indian system of ritual purity and pollution that dictates hands should be washed prior to entering the home due to a concern for ritual purity.

Insert Table 4

Another significant predictor of soap use is the convenience in using soap. Women who perceive a barrier in soap use are almost eight times less likely to use soap than

women who do not perceive any barriers to using soap (Table 4). The cultural variable, high belief in the ritual impurity of the “*dabba*” (a tin/plastic container that is used for carrying water to the open field or to a latrine) leads to a three times higher likelihood to use soap compared with a low belief in the impurity of the “*dabba*”. A possible reason for this is those who felt that the “*dabba*” (can) is highly impure felt that cleansing with soap further helps “ritual cleansing”. The four item knowledge scale though significant in the nested model (Table 4, model 1), is not a significant predictor of hand washing behavior in the full model (Table 4, model 2).

Both the Sadharanikaran variables retain an independent influence on hand washing behavior. They were entered last into the model to allow for a likelihood ratio test between the nested and full models. At a medium level of the Sadharanikaran index, there is a three times higher likelihood of using soap than at a low level of the index; this increases to an eight times higher probability of soap use when the index is high. The same pattern holds for the universalization/collective influence variable. Since it is a continuous variable, it has 1.2 times greater odds of using soap with each additional number of women perceived to be using soap.

The likelihood ratio test between the saturated and nested models yields a chi square value with a $p < .0001$, validating that the addition of the two theory variables has significantly improved the explanatory power of the model. This is corroborated by a 10 point increase in pseudo r^2 from the nested to the full model (Table 4).

The key elements of Indian philosophy are maintained and perpetuated through a complex set of formal and informal social institutions that uphold the primacy of the social group above that of the individual. The group can be clan, caste or village. The culture has evolved to a level that the philosophical tenets are interwoven into the daily lives of people through art, rituals, social customs and community norms (Lannoy, 1971). These essentially form the social environment in which most behaviors occur, and understanding the group solidarity process is germane to providing a contextual perspective to social behavior change.

Discussion

The paper introduces a new theory, Sadharanikaran based on an ancient Indian text of dance and drama. Cognitive responses based on rational thinking are placed at the centre of most modern behavioral theoretical pursuits. Sadharanikaran, on the other hand, celebrates emotion and provides a framework to analyze a range of emotional responses. Since persuasive effects of emotion have not been studied extensively, the evidence base for Sadharanikaran's key variables, *rasa*, *bhava*, *sahradaya* and universalization is scant. Sadharanikaran offers a new way of looking at emotion, a perspective that can help in moving forward our understanding of what drives changes in health behaviors. There are many pieces of the jigsaw of human communication that need to be better understood by communication scientists. Collective emotional response and its impact on behavior is one of them.

Behavioral change has been recognized as a core strategy for achieving reduction in mortality and morbidity (Bhutta et al, 2008; Kumar, Mohanty, Kumar, Misra &

Santosham 2008; Kerber et al, 2007). The challenge remains how to design communication interventions that are both socio-culturally meaningful and persuasively powerful and can sustain behavioral change. What is required is to apply appropriate theoretical solutions at the motivational stage, at the behavioral change stage and at the behavioral sustainability stage. Health communication campaigns in settings where societies are interconnected and social cohesion is paramount, cannot be planned on the basis of individual processes like Prochaska's stages of change within an individual's cognitive capacity. It is here that audience based theories such as Sadharanikran can lead the way. Relevant and culturally appropriate theoretical insights have to filter into national behavior change programs if maternal, newborn and infant lives have to be saved.

Newer theories such as Sadharanikaran are required to provide an assessment of the micro-environmental aspects of behavioral patterns, especially in communities where social hierarchies, social relations and networks influence health behavior and equity of access to health resources. In such contexts, to focus primarily on individual agency and intent as the main route of persuasive communication, is to perpetuate theory failure.

Theories in the behavioral sciences have followed the path of positivist empiricism. McGuire (1983), however, introduces the term "contextual epistemology" which encourages a more context sensitive approach to theory building and development. Communication theory now recognizes the role of multi theoretical approaches to explain communication contexts (Craig, 1999). The goal is not to propose Sadharanikaran as a single theoretical solution, but to encourage assimilation of its

relevant components into multi-theoretical frameworks in Indian and international contexts.

The inability of theoretical developments to enhance programs has led to much consternation and discussion within academia (Bunton, Murphy & Bennet, 1991, Mcleroy, Steckler, Simons-Morton, Goodman, Gottlieb, & Burdine, 1993, Jackson, 1997, Noar & Zimmerman, 2005, Weinstein & Rothman, 2005). The paper provides empirical support for the constructs of Sadharanikaran but at the same time also recognizes the role of cognitive, ecological and cultural constructs in predicting hand washing behavior (Kapadia-Kundu, 1994).

Sadharanikaran has been applied to several other public health settings. In 2004, it was used as a theoretical base to develop a HIV/AIDS counseling module for nurses at a large public hospital in Pune for a program developed by the Johns Hopkins School of Medicine. Sadharanikaran was applied to the module after Prochaska's theory of stage based behavior change showed no change based on pre and post test results. The nurses could not understand constructs such as pre-contemplative and contemplative stages. The counseling module was then modified based on principles of Sadharanikaran, simplification, compassion, asymmetry and universalization. The nurses understood it and there was an increase in pre and post test scores (JHU, 2004). Perhaps, Sadharanikaran's most meaningful application has been for the development of a state level health communication strategy for the National Rural Health Mission (NRHM) in India's most populous state, Uttar Pradesh (Government of Uttar Pradesh, 2008).

The paper provides an example of the role of non-cognitive variables in determining behavior change using data from a hygiene promotion study in rural Maharashtra, India. Although Sadharanikaran is a 2000 years old Indian theory, its implications are wide and its potential applications, global. Constructs like rasa (emotion) or evoking positive emotions are universal; as is compassion, a feeling that is germane to the persuasive communication process. Emotion has a smaller body of research in the western context compared to cognitive constructs (Zajonc 1980; Zajonc, 1984). Sadharanikaran provides a framework for understanding the role of positive emotions. It also has a range of non-cognitive constructs that can complement cognitive theories of health behavior.

Sadharanikaran enables persuasive options other than provision of information or knowledge. For example, media campaigns can promote compassion in health providers, discussion between spouses and among household members. Media campaigns and community level interventions can be designed to evoke emotional wellbeing. Techniques of collective influence can be utilized to promote health seeking and other health behaviors.

Health communication frameworks need to address communication patterns and behavioral pathways in different groups and populations. The older, broader distinctions of “Eastern” versus “Western” cultures do not hold in today’s “glocal” environment that is at once local and global. In such circumstances, non-cognitive approaches may be required for local or global settings.

The “knowledge-behavior” gap is evident in many large demographic surveys (IIPS & MACRO International, 2007). Yet, many communication impact studies continue to measure impact in terms of knowledge gain, instead of behavior change. A review of 24 mass media interventions in developing countries indicated “mixed” impact on outcomes related to HIV/AIDS (Bertrand, O’Reilly, Denison, Anhang, & Sweat 2006). Importantly, a large number of studies (15 out of 24) reported knowledge of four routes of transmission of HIV as the main outcome variable. Similarly, Piotrow, Kincaid et al (1997) discuss several communication campaigns that promote behavior change.

“Equal communication” and “increased discussion”, two relational variables in Sadharanikaran, provide us with two new intermediary variables, other than knowledge. Interestingly, two other non-cognitive variables outside the Sadharanikaran framework, – soap location and belief in ritual impurity, were also significant predictors of hand washing with soap after defecation. The role of non-cognitive factors in enabling and promoting behavioral change needs to be further explored. For example, soap location is a crucial variable in the context of the Indian cultural system of purity and pollution. The linkages of theoretical constructs to the local cultural context is at the root of developing models that will explain more variance and hence generate stronger evidence.

Behavioral and communication research needs to explore newer theoretical and research pastures to meet the challenges of achieving better health for communities globally. By providing empirical support for the main Sadharanikaran variables, we hope to stimulate further research on the non-cognitive determinants of health

behavior. The ancient Indian concept of simplification resonates powerfully in today's world as we attempt to transmit comprehensive health messages to diverse audiences with goal of promoting healthy behaviors, healthy households and healthy communities.

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Figure 1 Sadharanikaran, An Ancient Indian Theory of Communication

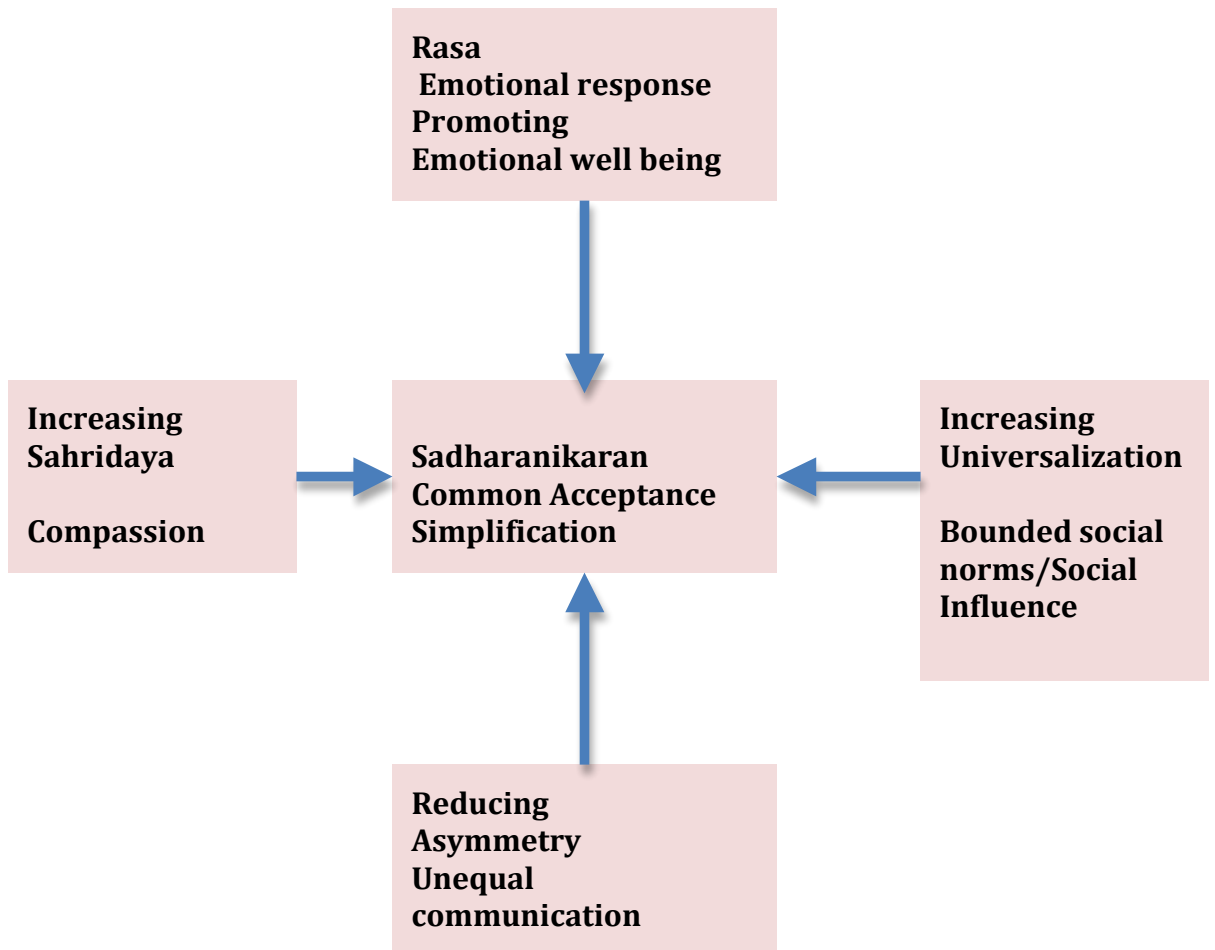


Figure 2: Variables for Theory Development & Testing for Predictive Models of Handwashing Behavior

<p>Control Variables</p> <p>Age Education Occupation</p>
<p>Ecological & Cultural</p> <p>Location of soap Perceived barrier about soap use Ritual Impurity associated with defecation</p>
<p>Knowledge & Attitude</p> <p>Knowledge of germ theory Attitude toward defecation</p>
<p>Sadharanikaran Variables</p> <p><i>Index of:</i></p> <p>Simplicity Rasa (emotion) Equal communication Talk about message within household Talk about message with other women</p> <p>Universalization/Social Influence</p>

Table 1 Bhava (*permanent emotion*) and Rasa (*aesthetic emotion*)

	<i>Bhava (permanent emotion)</i>	<i>Rasa (aesthetic emotion)</i>
1.	Snigdha - Love	Sringara - Love/Erotic
2.	Harsh - Humor	Hasya - Laughter
3.	Dina - Pathos	Karuna - Sorrow
4.	Bhayanaka - Violence	Bhayanak - Furious
5.	Drpta - Heroism	Veera - Effort
6.	Jugipsta - Fear	Bibhasta - Fear/Terrible
7.	Krodhi - Anger	Raudra - Loathing/odious
8.	Vismita - Wonder	Adbhuta - Surprise
9.	Sant - Quietude/Peaceful	Sant - Quietude/Peaceful

Note: This list has been compiled from several sources (Trivedi, 1980 and Wm de Bary, 1958).

Table 2: Socio-demographic Profile of Married Women in the Study and Control Areas

Socio-demographic Variables	Married Women (15 to 60 yrs) Study Group (N = 264) Percent	Married Women (15 to 60 yrs) Control Group (N = 301) Percent
Age (mean years)	31.8	31.4
Education		
Non-literate	71.9	79.1
Primary (up to 4th grade)	12.2	10.8
4 grade+	15.7	10.1
Occupation		
Agriculture	67.4	54.3
Laborer	8.7	6.3
Other (home maker, service etc)	23.2	39.2

Table 3: Crude and Adjusted Odds Ratio of Sadharanikaran Variables with Handwashing with Soap after Defecation

Sadharanikaran Variables	Crude Odds Ratio		Adjusted Odds Ratio (without social influence)		Adjusted OR (with social influence)
	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio
Simplicity 0: Not applic 1: Difficult 2: Easy	1.8*	1.0-2.9	1.0	0.6-1.6	1.0
Rasa (emotional index) 0-5	1.5***	1.3-1.9	1.4*	1.0-1.8	1.3*
Equal Communication 0: No talk 1: Own child gave message	1.5	1.2-1.7	0.9	0.5-1.6	0.9
Talk : Within household 0: No talk 1: Talked about Bal Sevak message	2.6***	1.7-4.8	1.4	0.7-2.7	1.3
With other women 0: No 1: Yes	2.7***	1.2-1.5	1.8	0.9-3.2	1.4
Social Influence: No. of other women perceived to use soap: (0-10)	1.3***	1.2-1.5	-	-	1.3***

* p<.05 ** p<.01 ***p<.001

Table 4: Testing the Sadharanikaran Theory with Logistic Regression: Nested and Full Models of Handwashing with Soap after Defecation

Variables	Model 1 Nested Model with Control, Eco-Cultural, Knowledge & Attitude Variables (N =264)		Model 2 Full Model with Control, Eco-Cultural, Knowledge, Attitude & Sadharanikaran Variables (N =264)	
	OR	95% CI OR	OR	95% CI OR
Literacy				
0: Non-literate ⁺				
1: Literate	2.5	1.0 – 5.8	3.1	1.2 – 7.6
Age				
<= 31 yrs	0.6	0.3 – 1.2	0.5	0.3 – 1.1
> 31 yrs ⁺				
Occupation				
0: Agriculture ⁺				
1: Laborer	1.8	0.9 – 3.8	2.2*	1.0 – 5.0
2: Other	1.5	0.6 – 3.0	1.5	0.5 – 3.3
Soap Location				
0: No soap	0.5	0.2 – 1.6	0.6	0.2 – 1.7
1: Inside the house ⁺				
2: Outside the house	4.6**	1.7 – 12.0	4.5**	1.6 – 12.5
Convenience: Soap Use				
0: Not convenient ⁺				
1: Convenient	9.2***	4.6 – 18.3	7.7***	3.6 – 16.5
Ritual Impurity				
0: Low Belief ⁺				
1: Medium Belief	1.9	0.6 – 6.2	1.5	0.4 – 5.9
2: High Belief	3.9***	1.7 – 9.0	3.1**	1.2 – 7.8
Knowledge				
0: Low ⁺				
1: High	2.2*	1.2 – 4.1	1.4	0.7 – 2.9
Sadharanikaran Index				
0: Low ⁺				
1: Medium			3.4**	1.4 – 8.3
2: High			8.4***	2.7 – 26.0
Universalization/Social Influence				
0-10			1.2***	1.9 – 8.6
Log likelihood		-121.99		-105.48
chi ² (df)		104.2*** (8)		138.3*** (13)
Likelihood Ratio Test chi ² (df)				33.8*** (3)
Pseudo R ²		0.30		0.40
Hos-Lem Goodness of Fit chi ² (df)		11.8 (8)		6.4 (8)

* p<.05 **p<.01 ***p<.001 + Reference Category

